

IN THE CLAIMS:

1. (Currently Amended) A method of cleaning ~~film deposition equipment, having a~~
treatment chamber in which a metal film may be stuck to an inside surface thereof, the
~~chamber being connected to piping and exhaust connected to a vacuum pump, comprising:~~
(a) ~~vaporizing a cleaning agent to form a vaporized cleaning agent;~~
(b) ~~supplying the vaporized cleaning agent through the piping into the chamber which~~
~~is being evacuated;~~
(c) ~~directly forming a metal complex by contacting the vaporized cleaning agent with~~
~~the metal inside of the chamber; and~~
forming a material including a metal inside the chamber;
supplying a cleaning agent including one of a carboxylic acid and a derivative of
carboxylic acid into the chamber such that the cleaning agent contacts the material to form a
metal complex of the metal and the cleaning agent; and
(d) ~~subliming the metal complex and exhausting it from the chamber through the~~
~~exhaust by using a heat source.~~
2. (Canceled)
3. (Currently Amended) The ~~cleaning method~~ of cleaning of claim 1, wherein the
cleaning agent is a compound selected from the group comprising among the following:
RCOOH, RCOOR', and R(COOH)_n (R, R' are hydrocarbon groups containing halogen atoms,
n being an integer), and a composition thereof.
4. (Currently Amended) The ~~cleaning method~~ of cleaning of claim 1, wherein the
cleaning agent is comprises trifluoroacetic acid.
5. (Currently Amended) The ~~cleaning method~~ of cleaning of claim 1, wherein the ~~film~~
~~deposition equipment~~ treatment chamber is a component of one of a chemical vapor
deposition equipment and a physical vapor deposition equipment.

6. (Currently Amended) The ~~cleaning~~ method of cleaning of claim 1, wherein the metal is copper.
7. (Currently Amended) The ~~cleaning~~ method of cleaning of claim 1, further comprising ~~adding~~ supplying an additive to the ~~vaporized~~ cleaning agent to promote that promotes complexing formation of the metal complex of the vaporized cleaning agent with and the metal.
8. (Currently Amended) The ~~cleaning~~ method of cleaning of claim 7, wherein the additive [is water vapor] includes oxygen.
9. (Currently Amended) A method of cleaning ~~film deposition equipment, having a treatment chamber in which a metal film may be stuck to an inside surface thereof, the chamber being connected to piping and exhaust connected to a vacuum pump, comprising:~~
 - (a) ~~vaporizing a cleaning agent to form a vaporized cleaning agent;~~
 - (b) ~~supplying the vaporized cleaning agent through the piping into the chamber which is evacuated;~~
 - (c) ~~directly forming a metal complex by contacting the vaporized cleaning agent with the metal inside of the chamber; and~~
forming a material including a metal inside the chamber;
supplying a cleaning agent including one of a carboxylic acid and a derivative of carboxylic acid into the chamber such that the cleaning agent contacts the material to form a metal complex of the metal and the cleaning agent;
 - (d) ~~subliming the metal complex and exhausting it from the chamber through the exhaust by using a heat source; and~~
repeating said supplying a cleaning agent and repeating said subliming the metal.
10. (Canceled)
11. (Withdrawn) Treatment equipment, comprising:
 - a treatment chamber for treating a substrate;
 - a susceptor disposed in the treatment chamber and on which the substrate is disposed;

a treatment gas supply system for supplying, in the treatment chamber, a treatment gas containing copper as a component;

an evacuation system for evacuating the inside of the treatment chamber; and

a TFA supply system for supplying trifluoroacetic acid in the treatment chamber.

12. (Withdrawn) The treatment equipment of claim 11:

wherein the treatment gas supply system comprises a treatment agent tank, treatment gas supply piping connecting the treatment chamber and the treatment agent tank and a treatment agent vaporizer disposed in the middle of the treatment gas supply piping;

wherein the TFA supply system comprises a TFA tank and a TFA supply piping connecting the TFA tank and the treatment gas supply piping, the treatment gas supply piping being downstream the treatment agent vaporizer in a direction of treatment gas movement.

13. (Withdrawn) The treatment equipment of claim 12:

wherein at least in a portion downstream the vaporizer of the treatment agent supply piping a heater is disposed.

14. (Withdrawn) The treatment equipment of claim 13:

wherein the treatment chamber is furnished with a heater to heat a wall surface of the treatment chamber.

15. (Withdrawn) The treatment equipment of claim 12:

wherein the treatment agent tank is a tank containing copper as a component.

16. (Withdrawn) The treatment equipment of claim 11, further comprising:

a supply system for supplying an additive that promotes complexing of copper.

17. (New) A method of removing a material including a metal comprising:

forming a metal complex by contacting a cleaning agent including one of a carboxylic acid and a derivative of carboxylic acid with the material including the metal; and
subliming the metal complex with a heat source.

18. (New) The method of cleaning of claim 17,
wherein, in said subliming the metal complex, the metal complex is heated at a temperature of at least 150°C.
19. (New) The method of cleaning of claim 17,
wherein, in said forming a metal complex, the cleaning agent is vaporized to form a vaporized cleaning agent and the pressure of the vaporized cleaning agent is at least 100 Torr.
20. (New) The method of cleaning of claim 1,
wherein, in said supplying a cleaning agent, the cleaning agent is vaporized.
21. (New) The method of cleaning of claim 1, further comprising:
confirming the existence of the material inside the chamber; and
repeating said supplying a cleaning agent and repeating said subliming the metal complex, if the existence of material inside the chamber is confirmed.